

# Statistical Writing?

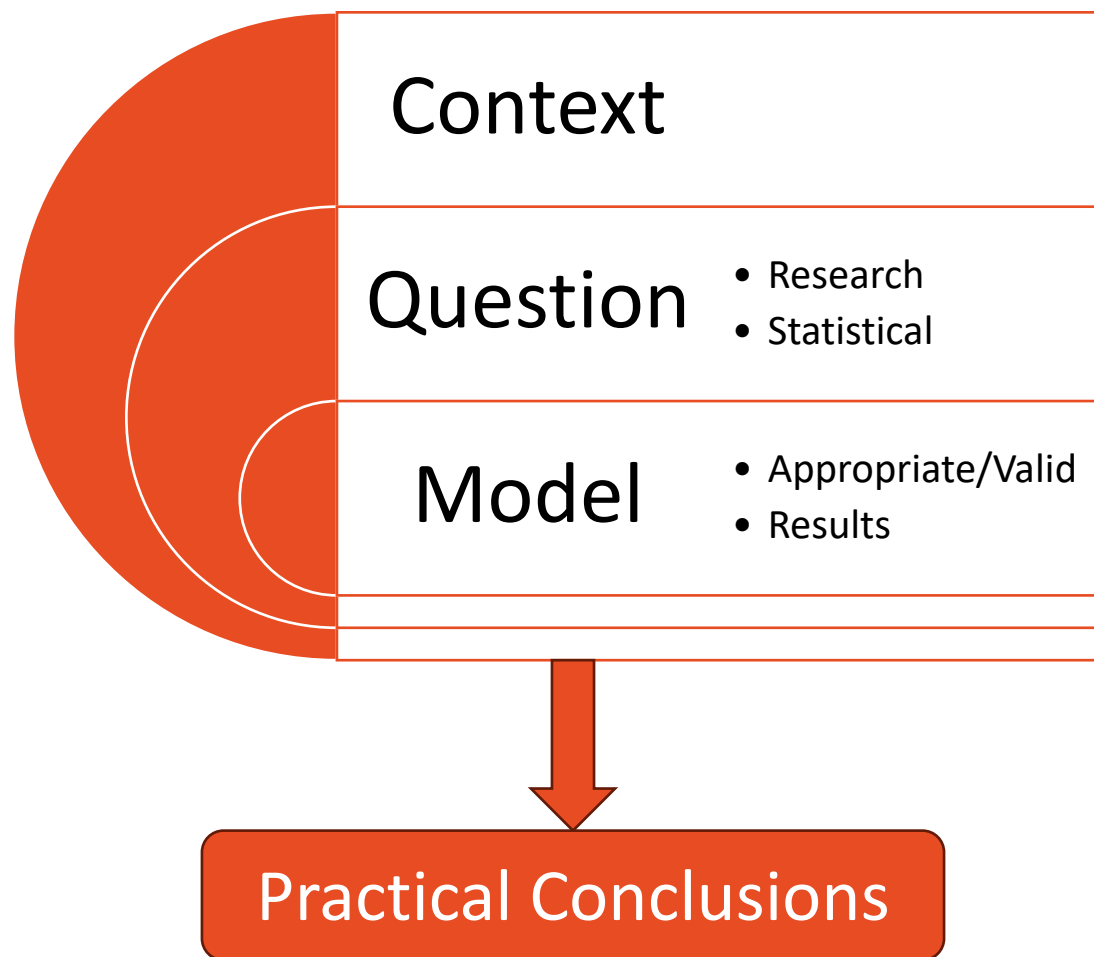
STAT 245

# Technical Writing (Alred, Brusaw, Oliu)

- Consider the **audience**
  - What technical knowledge will they have/level of detail will they want?
- Balance **clarity & conciseness**
  - Use technical terms only when appropriate
- **Organize** your work carefully
  - Use section and subsection headings generously and incorporate images and figures where relevant

# Linked rather than un-linked style

From Samsa & Oddone 1994, <https://www.jstor.org/stable/2684260>



- How does this question fit into a broader context?
- How does the general question of interest translate into a statistical question (that makes it clear exactly which variables will be analyzed from which dataset)?
- How does the statistical question lead to a particular model to fit?
- How was the appropriateness and validity of the proposed model confirmed?
- What do the data and the model results say about the statistical question?
- What practical conclusions do the technical results and conclusions suggest?

# A Contract between Writers & Readers

From: Shoemaker et al., 2021, <https://doi.org/10.1002/ecs2.3701>

Ghasemi et al., 2019 <https://brieflands.com/articles/ijem-88155.html#>

## Writers will...

1. Address context and relevance
2. State assumptions
3. Use clear signposting:
  - a) section/subsection titles,
  - b) first sentence of paragraph,
  - c) logical organization
4. Incorporate illustrations, graphs, diagrams
5. Clearly define mathematical notation
6. Use supplements and reproducible research documentation

## Readers will...

1. Expect to spend extra time interpreting math
2. Be willing to re-read
3. Learn with peers/discuss
4. Try to connect new technical content with methods/ideas you already know

## Useful tips

- Describe the study design, setting and participants, data collection, data analysis, and ethics approval
- Keep a **logical** or **chronological** order in writing
- Provide sample size for number of the patients, animals, or number of cells, organs, and biopsies for in vitro study
- Provide inclusion and exclusion criteria of the subjects
- Describe details for recruitment of the study subjects, randomization and/or blinding
- In case of intervention, provide dose, administration route, timing of administration, duration of intervention
- Provide exact information about the control group (e.g. placebo, saline, vehicle)
- Describe outcomes (responses) and how they were measured
- Describe validity and reliability of measurement tools

## Common pitfalls

- Too little or too much information
- Lack of providing method for all results
- [Use of] passive voice (“variables were selected...” is passive; “we selected variables...” is active)
- Lack of approval by an institutional review board
- Lack of approval by the ethics research committee
- Inappropriate, suboptimal, insufficiently described survey questions
- Insufficient description of study population
- Incomplete description of the sampling method
- Lack of adequacy in addressing confounding variables (for us: no/unclear articulation of model plan with reference to causal diagram)
- Describing methods like an advertisement